

## STATE BOARD OF HEALTH OF MAINE.

## The Prevention of Consumption.

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That insidious disease which we call consumption, phthisis, or tuberculosis of the lungs, is the most terrible destroyer of lives with which civilization has to contend.

At the present time the fact of the infectiousness of consumption is firmly established in a scientific way, and enough is known of the natural history of the infective agent, the *bacillus of tuberculosis*, and of the ways in which it is communicated to man, to enable us to lay down rules for the prevention of the disease with more positiveness than was formerly possible.

The source of infection is two-fold, from one human being to another, and from tuberculous animals to man.

Consumptive human beings, are, however, by far the greatest source of infection, but fortunately the ways in which the contagion is disseminated are but few, and by intelligent care they may be effectually controlled.

From the human source, we may consider the expectoration (the sputum) as practically the one great danger. The consumptive sputum usually contains an abundance of the infection, the bacilli, and these microscopic organisms are found to be capable of retaining their vitality and their infectious qualities for a long while, even after the sputum has been thoroughly dried.

As a general proposition the statement is true that the breath of the patient is not infectious, and that the same may be said of the sputum so long as it remains moist. Later experimental work, however, indicates a possibility of infection in the immediate vicinity of hard, open-mounted coughing.

Another line of investigation has proved that *the careless consumptive patient is a focus of infection, and a danger to all persons who come much in proximity to him*, especially to those who dwell in the same rooms with him.

The reason of this is that the expectoration of the patient, spit upon floors, carpets, pocket handkerchiefs, or clothing, becomes dried and pulverized, and, floated in the air, still contains the infectious germs, and cannot be inhaled without great danger.

Though infection may be regarded as the principal, *the essential*, cause of consumption, there are nevertheless various contributory causes which have much to do with increasing the death-rate from this disease, and they should never be disregarded. The most important of these are the breathing of impure air,—that of unventilated sleeping rooms, living rooms, schoolrooms, and offices,—the use of food not sufficiently nutritious, and dwelling upon a damp soil.

Heredity, formerly thought to be a potent cause of pulmonary consumption and other forms of tuberculosis, is now known to have but

little part in the causation of the disease. Since the infectiousness of the disease has been shown, family groups of consumption, "house epidemics," are now referred to infection rather than to hereditary influence. Though heredity is possible, the best authorities, the world over, now teach that cases of hereditary transmission of tuberculosis are very rare.

Many children die in their earlier years from various tubercular diseases, tubercular inflammation of the brain, "consumption of the bowels," etc. Many of these deaths are due to living amid infectious surroundings and breathing infected air. The danger to infants in the arms of tuberculous mothers, or in the rooms inhabited by consumptive persons, is very great indeed. It may safely be said that they are almost sure of contracting the infection if they occupy the same rooms with consumptive persons who are not exceedingly careful in the care of their sputum; and the danger is not by any means fully obviated by precautions as careful as may be carried out in the ordinary home.

From animals the chief source of danger is from the milk of tuberculous cows. A slighter degree of danger threatens from the use of meat from tubercular animals.

## PREVENTION.

### Rules for the patient.

Two facts should encourage the patient: One is that there is always an intrinsic tendency to recovery in the earlier stages of the disease, and that, under modern treatment a large percentage of cases do recover; the other is that there is no reason for any person to think that he is doomed by heredity, no matter what his family history may be.

It should be impressed upon consumptive patients and other persons living with them that the sputum (what they cough up) is dangerous and must be properly disposed of. It must not become dry. There are several ways in which the sputum may safely be cared for, but that mentioned under "B" is to be preferred. It is in use in most of the sanatoriums.

A. Pressed paper spit-cups, costing but little, are on the market. One or several can be used daily and, after it has been used, each cup with cover and contents are burned.

B. Paper cups held in a metal frame may be used. After use the cup and contents are burned.

C. Metal or porcelain spit-cups or spittoons, each containing a small quantity of disinfecting Solution 1 or 2, may be used. The final disposal of the sputum may be:

1. By pouring it down the water-closet.
2. By cremation when practicable. (a) In a small fire outdoors. (b) In the house heater, using a stout sheet iron box with a handle three feet long. Partly fill the box with sawdust, or fold a paper inside it; pour in the contents of the spit-cup or cuspidor; with the direct draft of the heater open, invert the box over the firepot, holding the box in place a moment until the flame or the heat sterilizes it. When the sputum is to be cremated, but a small quantity of the disinfecting solution should be used in the spittoon.

3. By setting the vessel aside, preferably in a warm place, so that the disinfectant may act eight or twelve hours longer. The quantity of disinfecting solution should be in excess of that of the sputum. Then bury or otherwise dispose of it so that flies and the domestic animals cannot reach it.

The patient should have two spit-cups or spittoons for alternate use. A cover should exclude flies. Cleansing can be done with washing soda and boiling water, or soap and hot water.

D. Knopf's aluminum pocket spit-flask is very convenient, especially when the patient is away from home, is traveling, or is confined to his bed.

E. When away from his room the patient may spit into Japanese



paper napkins to be put immediately into a rubber tobacco-pouch until they can be burned. But the fingers are pretty sure to be infected, and as a general practice spitting into napkins or pieces of cloth is not to be recommended.

F. Spitting into handkerchiefs should be avoided. If occasionally forced to do this, the handkerchief should be boiled before the sputum dries. Handkerchiefs upon which the sputum is allowed to dry, surround the user with a halo of infection, infect the pocket and everything else they touch, and lessen the patient's chances of recovery. After coughing, the lips should not be wiped with the handkerchief used for the nose. The lips may be wiped with paper napkins to be burned later.

Repress cough as much as possible. Cough gently with the mouth closed as much as possible. Never swallow the sputum. By so doing you favor the extension of the disease to the intestinal tract.

Do not soil personal or bed clothing with the sputum nor the hands when avoidable. Wash the hands often. Male patients, who wear a moustache or beard, should keep it closely clipped.

Do not infect the immediate surroundings of the home, nor spit upon the grass or hay or anywhere else where the sputum may be eaten by cattle, chickens, or other animals.

### Rules for attendants.

The floors, woodwork, and furniture of rooms in which consumptive patients stay should be wiped with a damp cloth, not dusted nor swept in the dry way.

Clothing may be disinfected by boiling as in ordinary laundry processes. Rooms may be disinfected with formaldehyde fumigation—large doses—supplemented with the washing of the floor with Solution 7. This should be done every few weeks when practicable, while the rooms are occupied by the patient. If the floor or other surfaces are accidentally soiled with sputum, the spots should be wet and rubbed with Solution 7, 1, or 2. (See Circular No. 70 for disinfection.)

Rooms for consumptives should have no fixed carpets. A few rugs may replace them. They should frequently be carried into the open air and exposed to the action of direct sunshine several hours at a time. For the thorough disinfection of them steam is the best. The table ware of the patient, the knife, fork, cup, and spoons particularly, should be kept separate and washed by themselves in scalding water.

In addition to the danger from infectious dust, if it is allowed to be diffused through the air, there are other possible ways of communicating the infection. It may be carried directly to the mouth by the fingers, or indirectly by handling articles of food. After soiling the hands, cleanse them carefully. Guard against inoculating cuts or abrasions of the hands with the sputum.

### Rules for everybody.

A. Anything tending to lower the tone of the general health may act as a predisposing cause of tuberculosis, as of other diseases,—insufficient nutriment, overwork, loss of sleep, worry, close and dusty air. Avoid these. *Do not over-heat homes and places of business.* From 65° to 68° F. is much better than higher temperatures. Habituation will make these lower temperatures comfortable? Live in the open air and sunshine as much as possible. *Sleep with wide open windows* at all seasons, protecting the body with enough clothing, and the top of the head if necessary in cold weather. In the morning open the bed and give it a prolonged airing and direct sunshine if practicable. In the daytime the open-window ventilation of sleeping rooms may be brief in cold weather, if "wide-open windows" is the rule at night. Wear only just enough clothing for comfort day and night. Avoid chest-protectors and extra heavy under-clothing, especially if you live indoors much. Eat temperately a sufficiency of plain, nutritious food,—a fairly "well balanced ration"—with a fair quantity of vegetable and animal oils and fats, particularly in cold weather, and limit the quantity of pastry, confectionery and other sweets. Keep clean, but use cold baths only when a comfortable reaction quickly follows. Undue exercise may be dangerous if lungs are affected. If there is prolonged loss of appetite, of strength, and of weight, with or without cough,

and without other plain cause, there is reason to suspect tuberculosis. If present, the sooner you know it, the quicker you can be cured.

B. Every new case of tuberculosis comes from some earlier case. The germs of this disease retain their vitality and their infectivity a long time under favoring conditions. Therefore do not bring into your house clothing formerly used by consumptives unless it has been thoroughly disinfected; do not move into an infected house or rooms, until the thoroughness of the disinfection is unquestionable; do not put to your lips or mouth, eating or drinking utensils, pipes, wind instruments, money, or anything else that has been used or handled by consumptives; do not buy bread, milk, or other articles of food, not to be cooked, from consumptives; kissing, particularly up-to-lip, is unsafe, if one party to the act is tuberculous; thorough cooking for meat or a temperature somewhat below the boiling point (176° F. for 10 minutes) for milk will render these food-stuffs safe.

By a strict observance of the rules which are expressed and suggested in the foregoing, the principal dangers of infection may be avoided.

*Sanatorium Treatment.*—For all persons to whom it is available, the sanatorium treatment of tuberculosis of the lungs is more efficient and is usually better for the patient and his family than treatment at home. In the well-equipped special sanatorium the patient has the advantages of the constant care of the physician; the possibilities of the fullest outdoor life under congenial conditions; a specially nutritious diet; exercise regulated to the special needs of each patient; baths for their curative influence; medical treatment, local or systemic, drugs or special apparatus as needed. Our northern summers have a favorable reputation, but patients under sanatorium treatment generally gain much more rapidly in winter than in summer.

The State board of health takes pleasure in calling attention to *The Maine Sanatorium* in the town of Hebron, for we believe that the climate of Maine is better adapted for the cure of many patients than that of many places where milder temperatures prevail, and because this institution is now equipped for as good and careful work as may be found anywhere. Its success is doubly gratifying for the reason that the initiatory move which led to the founding of the Sanatorium was started by the board.

## DISINFECTING SOLUTIONS.

### SOLUTION 1.

Carbolic Acid (pure liquified),	7 ounces.
Water,	1 gallon.

Mix. This is approximately a 5 per cent. solution. For the disinfection of clothing this solution mixed half and half with water will do.

### SOLUTION 2.

Lysol,	5 ounces.
Water,	1 gallon.

Mix. This may be used as a substitute for Solution 1, one-half the strength sufficing for uncolored clothing. Many colors are changed by it.

### SOLUTION 7.

Solution of Formaldehyde (Formalin),	6 ounces.
Water,	1 gallon.

Mix. This mixture contains a little less than 2 per cent. of formaldehyde.

It is a good plan to dissolve 4 or 5 tablespoonfuls of common salt in each quart of Solution 1, or Solution 2, thereby increasing considerably the disinfecting power of the solution.